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April 16, 1970

Dr. Joshua Lederberg  
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Dear Dr. Lederberg:

I have your letter of April 14th with its suggestion that I undertake the preparation of a textbook on yellow fever. This is not possible at the present time because of previous commitments.

The preparation of a letter to the editor is, I believe, inadvisable from my standpoint since I have been so intimately connected with pushing the eradication program in the past. I still hold an appointment as\* (below)

I have decided to send you the draft of a letter dated April 6 addressed to you which was superseded by the one you received under date of April 8. It is my thought that this letter gives you something more of the background while being somewhat repetitious.

The real purpose of this letter, however, is to advise you that a volume has just come off the press which devotes a considerable amount of space to the eradication concept and to the eradication of two African mosquitoes, Aedes aegypti and Anopheles gambiae. This volume has the title Building the Health Bridge: Selections From the Works of Fred L. Soper, published by the Indiana University Press, Bloomington, Indiana.

You will find in it sufficient information, I believe, to convince you that your ecological friends are mistaken in insisting that "no invertebrate pest had ever been intentionally eradicated over a significantly large area." I would point out that the area involved in the eradication of aegypti has covered many thousands of square miles, inhabited by many millions of people, and has been going on for over three decades, actually ever since 1933.

To be specific in answering the questions in your last paragraph, I would emphasize the fact that Aedes aegypti was literally eradicated in Mexico and in Brazil. The eradication of aegypti in the Federal District and in six states of Brazil, and in large parts of other states, was accomplished during the period 1933-1940 when I was in charge of the program and had every opportunity to check and double check the results. The real test of eradication, of course, is the interruption of all control measures thus giving the insect an opportunity to return in force if still present. Brazil was entirely free of Aedes aegypti for about ten years. Belém, at the mouth of the Amazon, was found reinfected in 1967, and the extent of the reinfestation suggested that it had been present in that area possibly a year or longer before being identified. Resurveys in other parts of Brazil show them to be still free of this mosquito.

\*Special Consultant to the Office of International Health of the Public Health Service.

Your question regarding the prospect of getting aegypti eradicated in the Caribbean is, of course, one of opinion. Some parts of this area suffered heavily from dengue outbreaks in 1963 and 1964 and again in 1969. The increasing importance to this area of the tourist trade has caused a number of the Governmental units in this area to renew their interest in aegypti eradication. The two serious holdouts in this region are Venezuela and the United States. Venezuela has had extensive epidemics of dengue twice in the past ten years. The appearance of hemorrhagic dengue, such as has been seen in Asia and the Western Pacific in recent years, would undoubtedly stimulate aegypti eradication fast.

A point which has not been properly publicized is the 1969 reinfestation of the city of Colón in Panamá. In 1949 jungle yellow fever was discovered at a place called Pacora, not far from the Canal Zone. Later in the same year yellow fever cases did occur in the Zone itself. At the beginning of the United States occupation of the Canal Zone, the treaty with Panamá gave to the United States the responsibility of the sanitary service in the cities at the two ends of the Canal, Panamá City on the Pacific and Colón on the Caribbean entrance. Thus it was that Gorgas was able to bring about the elimination of yellow fever from Panamá between 1904 and 1906.


In recent years the United States has no longer intervened directly in the sanitation of these two cities. In 1949 when yellow fever virus did appear in this area, the United States authorities collaborated most actively with the Panamanian Government in vaccinating the exposed population and, I believe, did help in the solution of the Aedes aegypti problem. The Congress of the United States appropriated some \$600,000 for this crisis.

That the 1949 invasion of the area by yellow fever virus was not unique, continuing studies by the Gorgas Memorial Institute revealed another invasion by the jungle virus in 1956. Thus it is that the reinfestation of Colón with Aedes aegypti is a definite threat to the reinfestation of not only the Canal Zone but also of Panama City and of many other towns of the country.

A point on which the United States is wide open for criticism is the statement which has been made repeatedly that the United States has not had outbreaks of dengue during the 1963-1964 and the 1969 outbreaks in the Caribbean. This statement overlooks entirely the outbreaks in Puerto Rico on both occasions. There were some 30,000 cases reported in 1963, while surveys of a limited area carried out by the U.S. Public Health Service indicated that probably only 10% to 15% of the cases which occurred had been reported. The question remains, Can the United States authorities say there has been no dengue in the United States when tens of thousands of cases have occurred in Puerto Rico?

You mention the possibility of using material from my letters. In answer I can say that I am anxious to have material used if it can be of value. I would suggest, however, that drafts be sent to me for correction or modification before publication.

Yours sincerely,



Fred L. Soper